



A23.E216  
JACC March 9, 2010  
Volume 55, issue 10A

## CARDIAC FUNCTION AND HEART FAILURE

### OBESITY CARDIOMYOPATHY: A NEW CONCEPT OF SECONDARY CARDIOMYOPATHY WITH UNIQUE ULTRASTRUCTURAL FEATURES

ACC Poster Contributions

Georgia World Congress Center, Hall B5

Sunday, March 14, 2010, 3:30 p.m.-4:30 p.m.

Session Title: Cardiomyopathies

Abstract Category: Cardiomyopathies/Myocarditis/Pericardial Disease

Presentation Number: 1067-47

Authors: *Tsunenori Saito, Kuniya Asai, Hiroshi Takahashi, Hidenori Komiyama, Koji Kato, Eisei Yamamoto, Hitoshi Takano, Toshihiko Ohara, Yuh Fukuda, Kyoichi Mizuno, Nippon Medical School Hospital, Tokyo, Japan*

**Background:** Obesity patients are sometime suffering from heart failure (HF). In obesity patients, HF is caused by many kinds of etiologies. However, histopathological changes of myocardium in patients with cardiomyopathy accompanied obesity have not been evaluated.

**Methods:** We examined 21 dilated cardiomyopathy (DCM) patients with obesity (body mass index; BMI > 30 kg/m<sup>2</sup>) and 19 DCM patients without obesity. Endomyocardial biopsy from the left ventricle (LV) was performed and pathological features were examined in all patients.

**Results:** Obese patients had higher BMI ( $38.1 \pm 7.7$  vs.  $23.7 \pm 3.3$  kg/m<sup>2</sup>,  $p < 0.001$ ). LV ejection fraction and LV dimension were not significantly different between the two groups ( $27.9 \pm 13.7$  vs.  $27.7 \pm 11.4\%$ ,  $p = 0.484$ ;  $65.0 \pm 8.2$  vs.  $62.2 \pm 10.2$  mm,  $p = 0.190$ , respectively). We measured the density of lipid droplets in 4 electron photomicrographs of biopsy specimens picked randomly and found the density of droplets in obese patients was significantly higher ( $1.97 \pm 1.47$  vs.  $0.63 \pm 0.10$  / $\mu\text{m}^2$ ,  $p < 0.001$ ). Serum troponin T level in obese patients was also higher ( $0.05 \pm 0.06$  vs.  $0.02 \pm 0.02$  ng/ml,  $p = 0.02$ ).

**Conclusion:** These results strongly suggest that the lipid droplets in sarcomere are specific evidence of DCM with obesity. Increasing levels of serum troponin T in obese patients indicates the existence of ongoing myocardial damage which may be associated with the lipid droplets. Accumulation of lipid in myocardium causes the lipotoxicity in human heart, and may induce cardiomyopathy.

